



July 31, 2007

Indiana Department of Environmental Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015

Attention: Ms. Dawn Groves
State Cleanup Program, Office of Land Quality

Subject: Analytical Results
Second Quarter 2007 Groundwater Monitoring
Tuchman Cleaners Facility
4401 North Keystone Avenue
Indianapolis, Indiana
Incident #1991-02-503

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DEPARTMENT OF
ENVIRONMENTAL MANAGEMENT
OFFICE OF LAND QUALITY

INTRODUCTION

On behalf of Tuchman Cleaners (Tuchman), URS prepared this letter to summarize the Second Quarter 2007 groundwater monitoring event analytical results for the above-referenced facility. Quarterly groundwater monitoring is being conducted at the request of the Indiana Department of Environmental Management (IDEM), State Cleanup Program (SCP) as stated in their letter dated December 11, 2001.

MONITORING ACTIVITIES

The Second Quarter monitoring activities were conducted on June 18 and 19, 2007. Groundwater elevations were measured in all wells on June 18, 2007 while the RW-1 pumping and treatment system was operating. Groundwater level measurements were collected using an electronic water level probe or an interface probe at wells where previous data suggest the potential presence of a separate dense non-aqueous phase liquid (DNAPL). The water level probe was generally decontaminated with a paper towel and distilled water prior to measurement at each well. At wells historically containing high volatile organic compound (VOC) concentrations, the water level or interface probe was washed with an alconox solution and rinsed with distilled water after use.

A representative set of monitoring wells was sampled on June 18 and 19, 2007. Sampling involved purging of the wells, measuring field parameters, and collecting samples for the analysis of VOCs including tetrachloroethene (PCE). Purging and sampling was performed using disposable polyethylene bailers and new lengths of nylon rope to eliminate the potential for cross contamination

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of the samples. Field measurements of temperature, pH, specific conductance, and oxidation-reduction potential (ORP) were made and recorded while purging each well. Groundwater samples were collected after a minimum of three well volumes of groundwater was purged and the field parameters stabilized. All purge water was contained and discharged into the onsite groundwater treatment system.

All groundwater samples were collected in laboratory-supplied glass vials and stored in an ice-chilled cooler. Samples were shipped via overnight courier to Kemron Environmental Services (Kemron) in Marietta, Ohio and analyzed for VOCs per United States Environmental Protection Agency (U.S. EPA) SW-846 Method 8260.

RESULTS

Data collected through sampling and analysis of monitoring wells on June 18 and 19, 2007 are summarized in Tables 1 and 2. The associated summary laboratory report is included electronically on a CD-ROM as Attachment 1.

GROUNDWATER FLOW

The groundwater level measurements collected during this event are presented in Table 1 along with measurements during the past three sampling events for comparison purposes. A piezometric surface map representing the shallow groundwater flow conditions while RW-1 was operating is plotted in Figure 1. Figures 2 and 3 illustrate the potentiometric surface of the intermediate and deep groundwater zones, respectively.

The shallow groundwater piezometric surface map reflects a general groundwater flow direction towards the west-northwest at a gradient on the order of 0.002, with recovery well RW-1 capturing a portion of the flow from under the facility (Figure 1).

The intermediate groundwater potentiometric surface map (Figure 2) illustrates a significant disparity between MW-1I and the other intermediate wells, similar to what was observed in the third quarter of 2005 and second quarter of 2006. This is likely attributable to a rise in water levels in the

intermediate groundwater zone to which MW-1I did not respond. This discrepancy further supports the suggestion of a poor hydraulic connection within the intermediate zone in the vicinity of MW-1I. Figure 2 illustrates the intermediate groundwater potentiometric interpretation without MW-1I data and indicates flow towards the east-northeast at a gradient ranging from 0.031 under the building to 0.018 west of the building.

The deep groundwater potentiometric surface map (Figure 3) indicates a gradient of 0.004 towards the east-southeast. The interpretation of the deep groundwater flow direction deviates from previous sampling events where groundwater flow in the deep zone ranged from northwest to southwest to southeast. The gradient is also nearly an order of magnitude less than previous sampling events. The second quarter of 2005 monitoring event did report a similar gradient for the deep zone (0.002) but a different groundwater flow direction (northwest).

ANALYTICAL RESULTS

The groundwater sample results are summarized in Table 2. The chlorinated VOCs (CVOCs) reported in the sampled wells during this event were within the range of values detected in these wells over the past few years, with exception to MW-4 where the CVOC total value was an order of magnitude below previously reported concentrations.

The shallow CVOC concentrations reported during this event were lower than those observed in the past several events (with exception to well MW-14) and these changes are generally subtle and are likely attributable to seasonal fluctuations or other perturbations of an otherwise stable plume. The PCE concentration detected in well MW-4 was anomalously low (0.435 mg/L), which is one to two orders of magnitude below previously reported concentrations.

Although DNAPL was observed in intermediate well MW-2I in September 2005, there has been no subsequent detection of DNAPL in that well. The groundwater sample from MW-2I collected during this quarter contained PCE at 135 mg/L, but DNAPL was not visually identified during purging.



Indiana Department of Environmental Management

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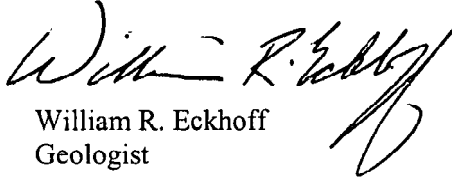
Increases in PCE, trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE) were observed in deep well MW-4D. All reported concentrations are below their respective IDEM residential closure levels identified in the Risk Integrated System of Closure (RISC) technical guide. This increase appears to be isolated but will continue to be evaluated in subsequent sampling events.

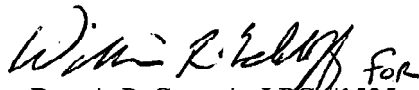
— ooOoo —

If there are any questions regarding these results, please do not hesitate to contact the undersigned at 513-651-3440 or Mr. Randy Jackson representing Tuchman Cleaners at 913-671-8405.

Very truly yours,

URS


William R. Eckhoff
Geologist


Dennis P. Connair, LPC #1535
Principal

14947346

Attachments

Copy: Mr. Randy Jackson

TABLE 1
GROUNDWATER ELEVATIONS
QUARTERLY GROUNDWATER SAMPLING - SECOND QUARTER 2007
JUNE 18, 2007

TUCHMAN CLEANERS
4401 NORTH KEYSTONE AVENUE
INDIANAPOLIS, INDIANA

Well No.	Reference Elevation* (feet)	9/27/06 ¹	9/28/06	12/12/06	12/20/06 ²	3/26/2007	6/18/07
		Groundwater Elevation (feet)	Groundwater Elevation (feet)	Groundwater Elevation (feet)	Groundwater Elevation (feet)	Groundwater Elevation (feet)	Groundwater Elevation (feet)
MW-1	728.16	715.85	715.92	716.29	-	718.55	717.24
MW-11	728.56 **	706.03	-	-	707.44	NM	712.61
MW-21	727.51 **	706.33	-	706.52	706.43	708.91	717.93
MW-3	727.2	715.95	716.06	716.41	-	718.61	717.27
MW-31	727.66 **	706.18	-	-	-	708.76	717.97
MW-4	727.71	715.82	715.89	716.28	-	718.48	717.24
MW-41	727.55	706.07	-	706.24	706.21	708.63	718.01
MW-4D	727.56	698.74	-	698.48	699.49	701.24	715.76
MW-5	727.84	715.73	715.84	716.19	-	718.45	717.22
MW-6	728.33	716.45	716.55	716.85	-	719.25	717.78
MW-61	728.22	711.29	-	-	710.93	712.45	717.17
MW-6D	728.2	702.8	-	-	703.32	706.1	714.66
MW-7	728.22	715.97	716.06	716.41	-	718.65	717.32
MW-8	727.87	715.89	715.94	716.33	-	718.57	717.31
MW-9	727.81	715.58	715.62	716.69	-	718.38	717.19
MW-10	728.56	716.06	716.11	716.48	-	718.68	717.47
MW-11	727.49	715.77	715.8	716.21	-	718.28	717.26
MW-12	728.08	715.73	715.77	716.18	-	718.19	717.28
MW-13	729.05	715.06	715.09	715.47	-	716.96	716.54
MW-131	729.05	705.46	-	705.62	705.63	708.06	718.18
MW-14	728.4	715.2	715.26	715.64	-	717.3	716.48
MW-141	728.4	705.47	-	705.67	705.65	708.08	718.18
MW-15	728.43	716.21	716.25	716.61	-	718.92	717.54
MW-16	727.37	716.36	716.42	716.74	-	719.07	717.57
MW-17	727.88	715.48	715.4	715.99	-	718.25	717.07
RW-3	728.31	NM	NM	NM	-	NM	NM
OSP-3	727.37	NM	NM	NM	-	NM	NM
OSP-4	737.21	NM	NM	NM	-	NM	NM
OSP-9	737.68	NM	NM	NM	-	NM	NM
OSP-13	731.37	NM	NM	NM	-	NM	NM
PZ-10D	727.99	702.4	-	703.03	702.91	705.79	715.49

* Monitoring wells were surveyed on February 20-26, 2003 and April 21, 2004 by Beacon Engineering of Indianapolis, Indiana. Reference elevations are relative to NAD 27 sea level datum.

** Monitoring wells were surveyed on September 13, 2004 by URS Corporation.

¹ All wells were measured on September 27, 2006 when the RW-1 pumping well was not operating.

"-" = Monitoring locations were not measured on September 28 or December 20, 2006 because representative water level measurements were collected on September 27 and December 12, 2006, respectively. Only shallow wells were measured on September 28, 2006 after the pumping and treatment system associated with RW-1 was reset the evening before.

² Intermediate and deep wells were measured again on December 20, 2006 because the wells were not accessible due to flooding
NM = Not Measured

TABLE 2
ANALYTICAL RESULTS SUMMARY
QUARTERLY GROUNDWATER SAMPLING - SECOND QUARTER 2007
JUNE 18 AND 19, 2007
TUCHMAN CLEANERS
4401 NORTH KEYSTONE AVENUE
INDIANAPOLIS, INDIANA

Parameters	RISC Closure Level*		Shallow Aquifer							Intermediate Aquifer			Deep Aquifer
	Residential	Industrial	MW-3	MW-4	MW-6	MW-11	MW-12	MW-13	MW-14	MW-21	MW-41	MW-131	MW-4D
TCL Volatile Organics (mg/L)													
Acetone	6.900	92	-	-	-	-	-	-	-	-	-	-	-
n-Butylbenzene	NR	NR	-	0.000782 J	-	-	-	-	-	-	-	-	-
sec-Butylbenzene	NR	NR	-	0.0117	-	-	-	-	-	-	-	-	-
tert-Butylbenzene	NR	NR	-	0.00268	-	-	-	-	-	-	-	-	-
Chlorobenzene	0.1	2	-	0.000344 J	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	0.6	9.2	-	0.00304	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	0.075	0.12	-	0.000846 J	-	-	-	-	-	-	-	-	-
cis-1,2-Dichloroethene	0.070	1	0.0373	0.394	-	0.0179 J	-	0.207	0.153	-	0.81	-	0.00063 J
trans-1,2-Dichloroethene	0.100	2	-	-	-	-	-	-	0.000524 J	-	-	-	-
Isopropylbenzene	0.83	10	-	0.00137 J	-	-	-	-	-	-	-	-	-
p-Isopropyltoluene	NR	NR	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	0.063	0.38	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	0.0083	2.0	-	-	-	-	-	-	-	-	-	-	-
n-Propylbenzene	0.31	4.1	-	0.000766 J	-	-	-	-	-	-	-	-	-
Tetrachloroethene	0.005	0.055	0.0583	0.344	0.0179	3.64	0.0268	1.74	0.285	135	16.6	-	0.00181
Trichloroethene	0.005	0.0072	0.0152	0.0915	-	0.0491	-	0.0772	0.0797	0.538 J	2.96	-	0.00472
1,2,4-Trimethylbenzene	0.016	5.1	-	0.0011 J	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	0.016	5.1	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	0.002	0.004	0.00857	0.144	-	-	-	0.0162	0.0104	-	-	-	-
Cumulative CVOC Concentration			0.119	0.9735	0.018	3.707	0.027	2.040	0.5281	135.538	20.370	-	0.007
Field Parameters													
Oxidation-Reduction Potential (mV)			-30	-120	86	58	79	44	-33	-127	-109	-109	-63
Specific Conductance (µmhos/cm)			917	820	935	760	805	936	1,003	954	979	876	754
pH (S.L.)			7.11	7.08	7.14	7.25	7.20	7.19	7.18	7.40	7.35	7.30	7.20
Temperature (Fahrenheit)			61.4	62.8	58.8	59.7	58.8	59.4	58.2	61.3	61.3	60.9	60.1

See last page for notes

TABLE 2 (Continued)

Groundwater samples were analyzed by KEMRON Environmental Services of Marietta, Ohio

"n" = Below detection limit

TCL = Target Compound List

NM = Not Measured

NA = Not Available

I = Semiquantitative result out of instrument calibration range

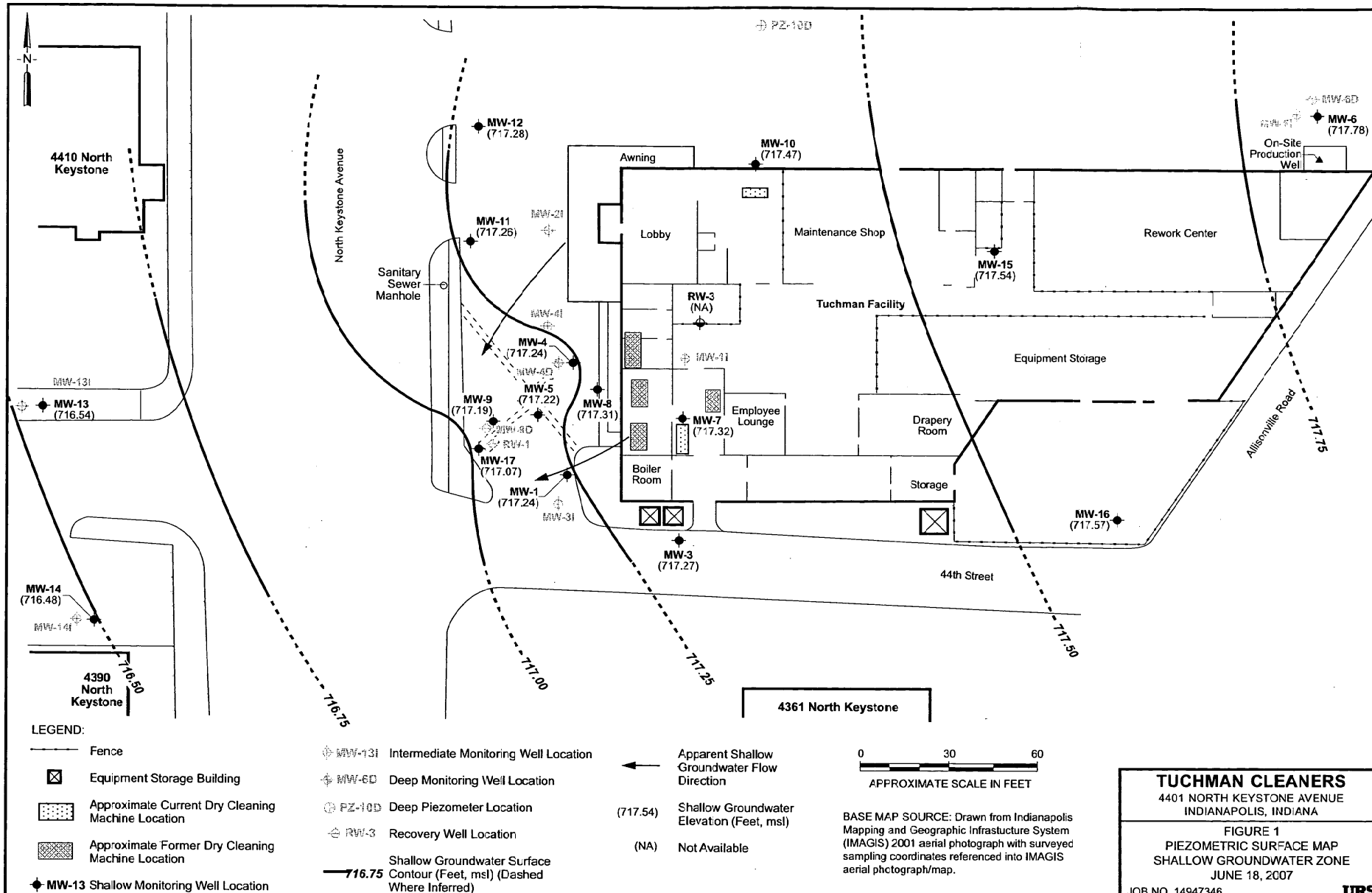
J = Estimated concentration below reporting limit

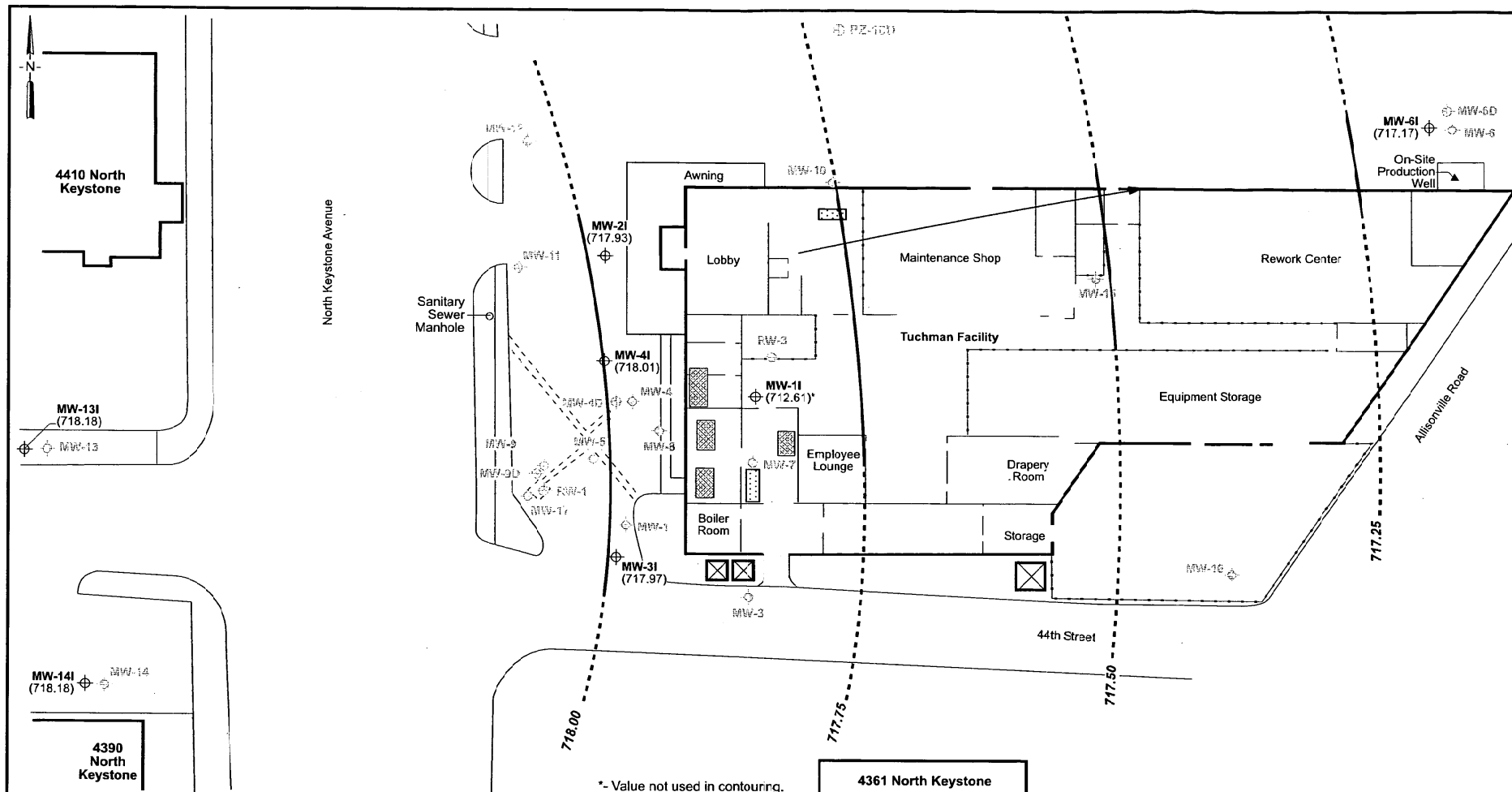
□ = Concentration exceeds RISC closure level for a residential setting

□ = Concentration exceeds RISC closure level for an industrial setting

* = RISC Closure levels are derived from Table A within Appendix A of the Indiana Department of Environmental Management (IDEM)

Risk Integrated System of Closure (RISC) Technical Guide (updated January 31, 2006)





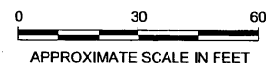
*- Value not used in contouring.

4361 North Keystone

LEGEND:

- Fence
- ☒ Equipment Storage Building
- ▨ Approximate Current Dry Cleaning Machine Location
- ▩ Approximate Former Dry Cleaning Machine Location
- ⊕ MW-13 Shallow Monitoring Well Location

- ⊕ MW-131 Intermediate Monitoring Well Location
- ⊕ MW-6D Deep Monitoring Well Location
- ⊕ PZ-100 Deep Piezometer Location
- ⊕ RW-3 Recovery Well Location
- 717.75 Shallow Groundwater Surface Contour (Feet, msl) (Dashed Where Inferred)
- ← Apparent Shallow Groundwater Flow Direction
- (717.17) Shallow Groundwater Elevation (Feet, msl)
- (NA) Not Available



BASE MAP SOURCE: Drawn from Indianapolis Mapping and Geographic Infrastructure System (IMAGIS) 2001 aerial photograph with surveyed sampling coordinates referenced into IMAGIS aerial photograph/map.

TUCHMAN CLEANERS
4401 NORTH KEYSTONE AVENUE
INDIANAPOLIS, INDIANA

FIGURE 2
POTENTIOMETRIC SURFACE MAP
INTERMEDIATE GROUNDWATER ZONE
JUNE 18, 2007

JOB NO. 14947346

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ATTACHMENT 1

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Analytical Results
Second Quarter 2007 Groundwater Monitoring
Tuchman Cleaners Facility
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